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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,834	02/13/2002	Christel Sarfert	10191/2131	9008

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EXAMINER	
LE, TOAN M	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application No.	Applicant(s)
	10/075,834	SARFERT, CHRISTEL
	Examiner	Art Unit
	Toan M Le	2863

-- The MAILING DATE of this communication appears on the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 13 February 2002 .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

Please label figures 1A and 1B.

Claim Objections

Claim 2, 7 are objected to because of the following informalities:

As to claim 2, lines 1-3, "wherein at least one of the at least one state variable and ones of the at least one system-dependent model parameter not selected is one of unchanged and set again by fixed predetermined models", it is not clear what is one state variable and ones of the at least one system-dependent model parameter not selected is one of unchanged and how it is set again by fixed predetermined models.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7, 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Birkle et al..

Referring to claim 1, Birkle et al. disclose a method for state sensing of a technical system, the technical system being an energy store (col. 12, lines 42-44), the method comprising: measuring at least one performance quantity (col. 12, lines 47-48; figure 2); supplying the at least one measured performance quantity to a state estimation routine 6 for determining at least

one state variable characterizing a current system state using a model based on at least one system-dependent model parameter and the at least one measured performance quantity (col. 12, lines 49-52; figure 2); and supplying the at least one measured performance quantity to a parameter estimation routine 17 (figure 3) to determine the at least one system-dependent model parameter depending on a use to improve a state estimation (figure 3) wherein a selection of at least one of the at least one state variable characterizing the current system state and the at least one system-dependent model parameter determined by estimation depends on a dynamic response of the at least one measured performance quantity (figures 2-3).

As to claim 7, Birkle et al. disclose a device for state sensing of a technical system, the technical system being an energy store (col. 13, lines 61-63; and col. 14, lines 1-2), the device comprising: a measuring arrangement to measure at least one performance quantity of the energy store (col. 14, lines 3-4; figure 2); a supplying arrangement to supply the at least one measured performance quantity to a state estimation 6 to determining at least one state variable characterizing a current system state using a model based on at least one system-dependent model parameter and the at least one measured performance quantity (col. 14, lines 5-8; figure 2); a parameter estimator 17 (figure 3) to determine the at least one system-dependent model parameter depending on a use to improve a state estimation, the at least one measured performance quantity being supplied to the parameter estimator (figures 2-3); a detecting arrangement to detect a dynamic response of the at least one measured performance quantity (figures 2-3); a selection unit 14 (figure 2) connected to the detecting arrangement to select at least one of ones of the at least one state variable and ones of the at least one system-dependent

model parameter determined in at least one of the state estimator and the parameter estimator depending on the dynamic response (figures 2-3).

Referring to claims 9-10, Birkle et al. disclose a computer program and a computer program product for being executed on at least one of a computer, a state estimator, and a parameter estimator 17 (figures 2-3), the computer program comprising: program code operable and a computer-readable data carrier storing program code that is operable to perform a process for state sensing of a technical system, the technical system being an energy store, (col. 14, lines 51-60) the process including: measuring at least one performance quantity (col. 12, lines 47-48; figure 2); supplying the at least one measured performance quantity to a state estimation routine 6 for determining at least one state variable characterizing a current system state using a model based on at least one system-dependent model parameter and the at least one measured performance quantity (col. 12, lines 49-52; figure 2); and supplying the at least one measured performance quantity to a parameter estimation routine 17 (figure 3) to determine the at least one system-dependent model parameter depending on a use to improve a state estimation (figure 3) wherein a selection of at least one of the at least one state variable characterizing the current system state and the at least one system-dependent model parameter determined by estimation depends on a dynamic response of the at least one measured performance quantity (figures 2-3).

As to claims 11-12, As to claim 7, Birkle et al. disclose a method and a device for state sensing of a technical system, the technical system being an energy store (col. 12, lines 42-44; col. 13, lines 61-63; and col. 14, lines 1-2), wherein the at least one state variable is supplied to the parameter estimation routine 6 and parameter estimator 17 (figures 2-3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birkle et al. in view of Schoch.

Referring to claim 3, Birkle et al. disclose a method for state sensing of a technical system, the technical system being an energy store (col. 12, lines 42-44), the method comprising: measuring at least one performance quantity (col. 12, lines 47-48; figure 2); supplying the at least one measured performance quantity to a state estimation routine 6 for determining at least one state variable characterizing a current system state using a model based on at least one system-dependent model parameter and the at least one measured performance quantity (col. 12, lines 49-52; figure 2); and supplying the at least one measured performance quantity to a parameter estimation routine 17 (figure 3) to determine the at least one system-dependent model parameter depending on a use to improve a state estimation (figure 3) wherein a selection of at least one of the at least one state variable characterizing the current system state and the at least one system-dependent model parameter determined by estimation depends on a dynamic response of the at least one measured performance quantity (figures 2-3).

Birkle et al. do not teach at a high/low dynamic response of the at least one measured performance quantity, ones of the at least one state variable having small/large time constants and ones of the at least one system-dependent model parameter having small/large time constants are selected for estimation.

Schoch discloses a method for state sensing of a technical system, the technical system being an energy store (col. 2, lines 8-10), wherein at a high/low dynamic response of the at least one measured performance quantity, ones of the at least one state variable having small/large time constants and ones of the at least one system-dependent model parameter having small/large time constants are selected for estimation (col. 2, lines 39-58;).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied selecting state variable/system-dependent model parameter having small/large time constants at a high/low dynamic response of the measured performance quantity for estimation as described by Schoch reference into the method of Birkle et al. to figure out whether a battery is able to supply a minimum voltage required for a reliable operation of the battery.

As to claims 2 and 4, Birkle et al. disclose a method for state sensing of a technical system, the technical system being an energy store (col. 12, lines 42-44), the method comprising: measuring at least one performance quantity (col. 12, lines 47-48; figure 2); supplying the at least one measured performance quantity to a state estimation routine 6 for determining at least one state variable characterizing a current system state using a model based on at least one system-dependent model parameter and the at least one measured performance quantity (col. 12, lines 49-52; figure 2); and supplying the at least one measured performance quantity to a parameter estimation routine 17 (figure 3) to determine the at least one system-dependent model parameter depending on a use to improve a state estimation (figure 3) wherein a selection of at least one of the at least one state variable characterizing the current system state and the at least

one system-dependent model parameter determined by estimation depends on a dynamic response of the at least one measured performance quantity (figures 2-3).

Birkle et al. do not mention determining before an estimation determination whether the technical system is in a limit state at one of a beginning and an end of a service life of the technical system, wherein at least one of the at least one state variable state and the at least one system-dependent model parameter is not selected is one of unchanged and set again by fixed predetermined models if the technical system is in the limit state.

Schoch discloses a method for state sensing of a technical system, the technical system being an energy store (col. 2, lines 8-10), comprising determining before an estimation determination whether the technical system is in a limit state at one of a beginning and an end of a service life of the technical system, wherein at least one of the at least one state variable state and the at least one system-dependent model parameter is not selected is one of unchanged and set again by fixed predetermined models if the technical system is in the limit state (col. 4, lines 49-56).

Accordingly, it would have been obvious to one having ordinary skill in the art at time the invention was made to have applied determining before an estimation determination whether the technical system is in a limit state at one of a beginning and an end of a service life of the technical system, wherein at least one of the at least one state variable state and the at least one system-dependent model parameter is not selected is one of unchanged and set again by fixed predetermined models if the technical system is in the limit state as described by Schoch into the method of Birkle et al. to figure out whether a battery is able to supply a minimum voltage required for a reliable operation of the battery.

Claims 5-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birkle et al. in view of Tate, Jr. et al..

Referring to claims 5-6 and 8, Birkle et al. disclose a method and a device for state sensing of a technical system, the technical system being an energy store (col. 12, lines 42-44), the method comprising: measuring at least one performance quantity (col. 12, lines 47-48; figure 2); supplying the at least one measured performance quantity to a state estimation routine 6 for determining at least one state variable characterizing a current system state using a model based on at least one system-dependent model parameter and the at least one measured performance quantity (col. 12, lines 49-52; figure 2); and supplying the at least one measured performance quantity to a parameter estimation routine 17 (figure 3) to determine the at least one system-dependent model parameter depending on a use to improve a state estimation (figure 3) wherein a selection of at least one of the at least one state variable characterizing the current system state and the at least one system-dependent model parameter determined by estimation depends on a dynamic response of the at least one measured performance quantity (figures 2-3).

Birkle et al. do not teach a method and a device for state sensing of a technical system, the technical system being an energy store, wherein a quality of an estimation is checked based on a covariance matrix, which is calculated for at least one of the at least one state variable and one system-dependent model parameter and used only if associated covariance of the covariance matrix converge.

Tate, Jr. et al. disclose a method and a device for state sensing of a technical system, the technical system being an energy store (col. 13, lines 34-35), wherein a quality of an estimation is checked based on a covariance matrix, which is calculated for at least one of the at least one

state variable and one system-dependent model parameter and used only if associated covariance of the covariance matrix converge (col. 14, lines 52-55).

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied the method as described by tate, Jr. et al. wherein a quality of an estimation is checked based on a covariance matrix, which is calculated for at least one of the at least one state variable and one system-dependent model parameter and used only if associated covariance of the covariance matrix converge into the method of Birkle et al. for quantifying the covariances and covariances as the quality of the estimate to figure out whether a battery is able to supply a minimum voltage required for a reliable operation of the battery.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,534,954 to Plett U.S. Patent No. 6,208,949 to Eatwell

U.S. Patent No. 6,362,598 to Laig-Horstebrock et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M Le whose telephone number is (703) 305-4016. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703) 308-3126. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0655.

Toan Le

August 18, 2003

John Barlow
Supervisory Patent Examiner
Technology Center 2800